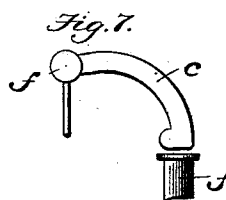
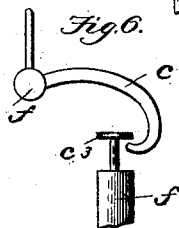
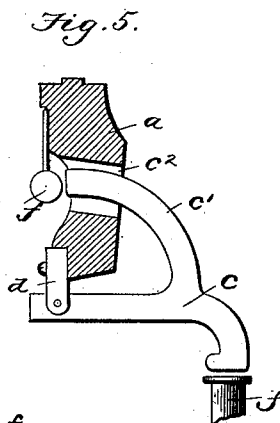
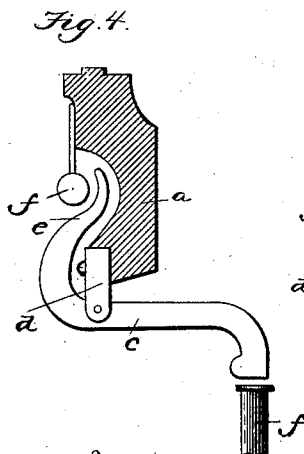
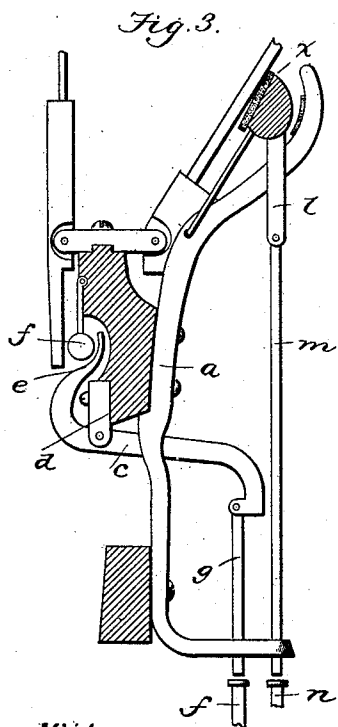
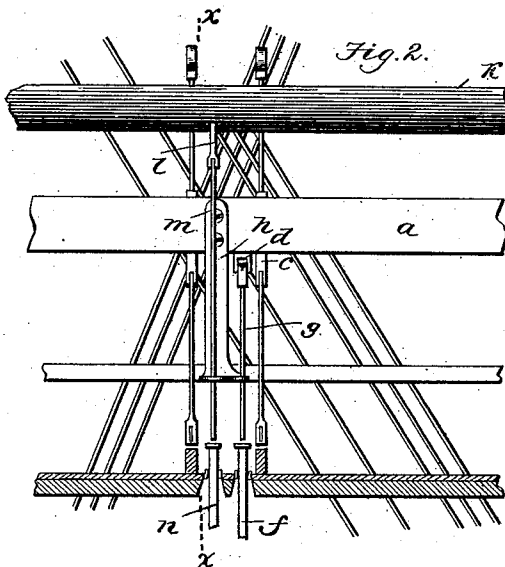
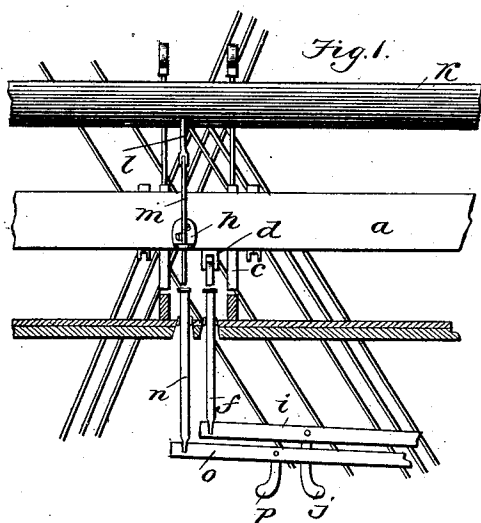


(No Model.)

A. H. HASTINGS.
PIANO.

No. 468,135.

Patented Feb. 2, 1892.



Witnesses
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UNITED STATES PATENT OFFICE.

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SPECIFICATION forming part of Letters Patent No. 468,135, dated February 2, 1892.

Application filed October 14, 1891. Serial No. 408,718. (No model.)

To all whom it may concern:

Be it known that I, AZARIAH HORACE HASTINGS, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Pianos, of which the following is a specification.

My invention relates to improvements in pedal-actions for upright pianos, and has for its object the production of a pedal-action which shall be easily operated by having its operative parts near the center of the weight and spring-power of the hammers and the dampers near the line of the force applied to the pedal-foot, which interposes no obstacle to the ready removal of the piano-action from the case, and which reduces the liability of warping of the rails, rods, and levers to the minimum.

To this end my invention consists in the details of construction and combination of parts, all as hereinafter more particularly pointed out and claimed.

In the accompanying drawings illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is an elevation of a part of a small piano, showing the application of my invention. Fig. 2 is a similar view of a large piano where abstracts are required. Fig. 3 is a section of the line $x x$, Fig. 2. Fig. 4 is an enlarged view of the device for operating the loud or forte pedal of a small piano, and Figs. 5, 6, and 7 are modifications of the same.

a is the action-rail of common form, to which the usual parts of the action are attached, and having pivotally connected at its rear the ordinary damper-rod f , which is without the usual crank or arm at the end, but in other respects is and operates in the well-known manner for the loud or forte pedal.

c is a lever for operating the damper-rod f , pivotally connected or centered to a flange d , secured to the action-rail and having a curved extension or tongue e , adapted to be brought into contact with the damper-rod b and hold it against the dampers. The forward end of lever c is substantially right-angled and terminates in a foot upon which the disconnected operating or lifting rod f acts in small pianos, and in larger instruments where abstracts are required an auxiliary rod g , Fig. 3, of suit-

able length, is pivotally connected to the forward termination of the lever c , in a similar position to the abstracts, and its lower end may be guided in the same manner as said abstracts, or the construction may be simplified by passing rod g through a guide-hole of a metal plate or strip h , attached to the action-rail, the device being acted on as before by rod f , trap-lever i , and pedal-foot j .

In the modification shown in Fig. 5 the lever c is provided near its forward end with an upwardly-curved branch or arm c' , which passes and operates through a hole c'' in the action-rail, the end of said arm impinging against the damper-rod b , the action and operation being the same as before.

In Fig. 6 the lever c is permanently secured to damper-rod b , and the action is arranged to "pull down" by curving the lever c under a projection or button c'' , protruding from the end of operating-rod f , or by other equivalent means.

In the modification shown in Fig. 7 the action is arranged to "lift" and the position of the damper-rod b is reversed—i. e., instead of being hung from the action-rail it is pivotally supported from below—and is provided with the lever or curved arm c , terminating in a foot upon which the end of operating-rod f acts to operate the device through trap-lever i and pedal-foot j , as described with reference to Fig. 4.

It is obvious that the different devices may be arranged to lift or to pull down; but I prefer the former, as a more satisfactory leverage is obtained.

The soft or pianissimo device is as follows: To the hammer-rest rail k is attached a downwardly-projecting arm or rod l , to which is pivotally secured the auxiliary or lifting rod m , which is guided by passing it through the guide-hole of a plate h , fast to the action or abstract rails, or both. This device is actuated by the disconnected operating-rod n , trap-lever o , and pedal-foot p .

It will be apparent from the foregoing that my arrangement of the pedal-action at the gap between the understringing and the overstringing (which is necessarily a wide one) applies the force exerted on the pedal-feet to the central point of the weight and spring-power of the various attachments, and there-

by requires less exertion or force to operate it. A short-trap lever may be used and warping thereby prevented, and, moreover, the arrangement in this position and the use of disconnected operating-rods *f* and *n* interposes
5 no obstacle to the ready removal of the piano-action from the case when desirable or necessary.

The parts not herein particularly specified
10 and described may be of ordinary construction and arrangement.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In pedal-actions for upright pianos, a
15 damper-rod operated by a lever applied at the gap left between the overstringing and the understringing of the piano, substantially as described.

2. In pedal-actions for upright pianos, a
20 damper-rod operated by a lever applied at the gap left between the overstringing and the understringing of the piano, said lever being actuated by a disconnected operating-rod, trap-lever, and pedal-foot, substantially as
25 described.

3. In pedal-actions for upright pianos, a lever for operating the damper-rod pivotally connected to a flange secured to the action-rail and operating at the front of said damper-rod to throw it backward when actuated by
30 a disconnected operating-rod, trap-lever, and pedal-foot, substantially as described.

4. In pedal-actions for upright pianos, a lever for operating the damper-rod pivotally
35 connected to a flange secured to the action-rail and operating at the front of said damper-rod to throw it backward, in combination with an auxiliary rod pivoted to the forward end of said lever, a disconnected operating-rod,
40 trap-lever, and pedal-foot, substantially as described.

5. In pedal-actions for upright pianos, a movable hammer-rest rail operated by pedal mechanism applied to the gap left between
45 the overstringing and the understringing of the piano, substantially as described.

6. A movable hammer-rest rail provided with a downwardly-projecting arm or rod, to which is pivotally connected an auxiliary rod, in combination with a disconnected operating-rod, trap-lever, and pedal-foot, substantially as and for the purpose specified. 50

7. A movable hammer-rest rail provided near its center with a downwardly-projecting arm or rod, to which is pivotally connected an auxiliary rod, which is guided through a hole in a guide-plate, in combination with a disconnected operating-rod, trap-lever, and pedal-foot, substantially as and for the purpose specified. 55

8. In pedal-actions for upright pianos, the forte and pianissimo mechanism applied, respectively, to the damper-rod and to the hammer-rest rail at the gap left between the overstringing and the understringing of the piano, substantially as described. 60

9. In an upright piano, a damper-rod operated by a lever pivotally attached to the action-rail and actuated by an operating-rod, trap-lever, and pedal-foot, in combination with a movable hammer-rest rail operated by a pivotally-connected rod passing through a guide-plate and actuated by an operating-rod, trap-lever, and pedal-foot, substantially as described, and for the purposes set forth. 65

10. In an upright piano, a damper-rod operated by a lever pivotally attached to the action-rail and having pivotally secured to its forward end an auxiliary rod passing through a guide-plate actuated by a disconnected operating-rod, trap-lever, and pedal-foot, in combination with a movable hammer-rest rail having a downwardly-projecting arm and having a rod pivotally secured thereto and passing through a guide-plate actuated by a disconnected operating-rod, trap-lever, and pedal-foot, substantially as described. 70 75 80 85

AZARIAH HORACE HASTINGS.

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